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Bureau of Educational Research Annual Report, December, 1953

By ARTHUR W. FOSHAY

THIS year an attempt is being made to draw together the various divisional reports of the Bureau of Educational Research into a single statement. Those who wish more detailed information than is offered here may have it upon request.

THE Bureau of Educational Research is large and heterogeneous. It is viewed in different ways according to one's professional position. Some Ohio school superintendents know only of the Bureau's Survey Division. Some professors of education know only of the EDUCATIONAL RESEARCH BULLETIN. Other people know of the Bureau through the School of the Air, or through the annual Institute for Education by Radio-Television. On this campus, some of the professors know of the Bureau chiefly through the Teaching Aids Laboratory. (Readers of earlier annual reports of this Bureau are aware of the fact that it exists in ten divisions, through some of which there are extensive field services operated, and through others of which there are publications and research projects developed.) Here are the divisions of the Bureau of Educational Research, with brief descriptions of what is being carried on within them.

Appointments Division: JOHN NIEDERHAUSER, MARGARET VESEY

This is the University's agency for teacher placement. Through this division, a large number of elementary-school, secondary-school, and college teachers are directed to employing agencies each year. School administrators of all kinds are also employed through this service.

It is a basic policy of this division that its service is rendered to the

employing agency, not primarily to the prospective employee. The annual report of this division has become a basic document in the continuing study of educational manpower in the state of Ohio.

Curriculum Division: EDGAR DALE, ROBERT KILBOURN

This office publishes the monthly *News Letter* on motion pictures, radio, and other instructional aids. Mr. Dale is widely known as the author of *Audio-Visual Methods of Instruction*; the Dale-Chall Readability Formula is in wide use, and a steady stream of consultation on its use is offered through this division.

Editorial Division: ROSCOE H. ECKELBERRY, JOSEPHINE MACLATCHY

This is the division that handles the publications of the Bureau of Educational Research. The EDUCATIONAL RESEARCH BULLETIN is published nine times a year, and the *Journal of Higher Education*, while not a Bureau publication, is edited through this division. In addition, Bureau monographs and pamphlets are prepared for publication by the Editorial Division.

Evaluation Division: W. R. FLESHER, MARIE A. FLESHER

The evaluative sections of school surveys are developed in this division, which also distributes the "Ohio Teaching Record." In addition, several research studies are under development in this division.

Reference Library: RUTH SEEGER

The Reference Library of the Bureau of Educational Research is a repository of educational-research materials of all kinds. Since many of these materials are fugitive in nature, the fact that the Reference Library has been collecting them since 1922 has made it one of the best collections of basic educational-research material in the country. The Library serves faculty members and graduate students of this University; a librarian also sends out bibliographies of educational research upon request.

The Ohio School of the Air: MARGARET TYLER, MARION RENICK

The Ohio School of the Air prepares and arranges for the broadcasting of eight 15-minute educational radio programs each week during the academic year, over Station WOSU. Some of these programs are also recorded on tape and used by other educational radio stations in Ohio and elsewhere in the United States. Manuals to accompany these programs are issued in large numbers to teachers in this state.

Personnel Division: Ross L. MOONEY

The Mooney Problem Check Lists have achieved wide acceptance in the country as a whole. They were developed within the Bureau of

Educational Research but are now published commercially. During recent years, Mr. Mooney has been developing a series of studies of creativity, in association with a national group devoted to the same purpose.

Survey Division: JOHN H. HERRICK, M. J. CONRAD, E. B. SESSIONS

The Survey Division is widely known for a large number of building and comprehensive surveys conducted both in and out of the state of Ohio. In addition, seven annual studies of various aspects of educational finance in Ohio are published through this division. Currently, the demand for building surveys is running ahead of the capacity of this division.[1]

Teaching Aids Laboratory: NORMAN WOELFEL, CATHARINE WILLIAMS, HAZEL GIBBONY

The Teaching Aids Laboratory conducts several services and inquiries. The Film Library and Equipment Pool for the University provide the projection service for the campus. The Recording Studio for the University, the Curriculum Materials Center for the College of Education, and the Chart and Graph Service of the University are all located in this division. In recent years the Teaching Aids Laboratory has published a number of widely used film strips, as well as pamphlets on instructional materials.

The Institute for Education by Radio-Television: I. KEITH TYLER

The annual Institute for Education by Radio-Television takes place in Columbus in April each year. At this Institute, the widely known "Ohio State Awards" are given to broadcasters whose work in educational radio or educational television is judged meritorious by a nationwide jury. The meeting of the Institute occupies three days, the program consisting of discussions and major addresses on problems and procedures in educational broadcasting. The proceedings of each year's conference are published in a volume entitled *Education on the Air*. In addition to conducting this Institute, Mr. Tyler serves nationally as a consultant in educational broadcasting and teaches a number of courses in this field.

DURING the past year, certain trends in the work of the Bureau of Educational Research have begun to appear, and certain kinds of activity have remained prominent. Let us consider these.

The Bureau of Educational Research has always been "ori-

[1] *See* "The Survey Division: a Special Report," EDUCATIONAL RESEARCH BULLETIN, XXXII (May 13, 1953), pp. 132–34.

ented to the field," as we like to say. The activities of the Survey Division are a case in point. During the twelve-month period ending September 30, 1953, requests for assistance were received from 78 Ohio school districts by the Survey Division. The Division was able to meet only 60 per cent of these requests with some kind of assistance since its calendar was filled by October 30, 1952. (The same thing is true this year; by October 30, it was impossible for the Survey Division to promise any more service to be completed during the academic year.)

Other kinds of field work have also been carried forward this year. Mr. Flesher has worked with three city school districts in Ohio in the development or refinement of means for selecting administrative officers. He and Mrs. Flesher have conducted a workshop in Steubenville which has taken on some of the aspects of field research during the current year. In addition, Mr. Flesher has taken part in the affairs of the Ohio Association of School Administrators as chairman of their Research Committee; he has, in addition, worked with a group of administrators and University representatives to the end that plans are being laid for a broader dissemination in Ohio of research done in local Ohio schools.

The Ohio School of the Air is, of course, a field service. We are seeking to broaden this area of field service through experimentation with programs in educational television. At present, two such programs are under development, and broadcasts will probably begin in the Columbus area in mid-February. This project is under the leadership of Keith Tyler.

The Appointments Division of the Bureau is another field service. This year, requests for its service have increased 20 per cent, though the staff of the Division has remained the same size.

Our emphasis on field work is as old as the Bureau. There is a new trend emerging which should be reported at this time. The Bureau of Educational Research is seeking now to develop self-help approaches and materials for use in the field. In a sense, the tests and other publications of the Bureau that have appeared since its beginning may be thought of as serving this "self-help" purpose. However, we seek rather specifically to increase this kind of activity. Two of our present efforts will illustrate this trend.

The first is the development of manuals to be used in deter-

mining local building needs. One of these, by Mr. Conrad, is to be published very shortly. This manual will assist a local school administrator to determine the present capacity of an existing secondary-school building, to the end that additions to the building may be planned more intelligently. A second manual, by Mr. Herrick, will allow the local school administrator to gather information basic to a building survey of a school district.

Certain work being carried on in Steubenville by Mr. and Mrs. Flesher, in Delaware by Mr. Woelfel, Mr. Dale, and Mr. Foshay, and in Bexley by Mr. Foshay, may also be viewed as an attempt to increase the self-help aspect of our work. Like educational consultants and researchers in other universities, this Bureau is on the brink of a major new development. We are trying to find out how to build a research approach to the solution of school problems into the continuing activity of the school system. This can be stated as an hypothesis: In the degree that the leadership of a school system can state its goal, as hypotheses to be tested through the gathering of evidence, its progress will be sure and unfaltering. A great deal has changed in the American educational scene over the past fifty years. However, some changes have been unwise, some have been ill-timed, some have not been adequately tested. To the extent that school systems can experiment with changes, rather than merely institute them, we can expect that the changes made will follow the method of intelligence. We can expect, too, that some irrational resistance to certain kinds of desirable educational change will diminish.

This is what the field-research idea is about. If we can develop with local school systems some uncomplicated ways of designing tests of action to be undertaken, and if we can disseminate these research processes widely, we can expect local school systems to be less vulnerable to some kinds of attack, to be less doctrinaire, and in general to be able to offer the facts in support of changes they wish to make.

THE members of the Bureau Staff have over the years been constant participants in national educational affairs. Currently, members of the Bureau Staff hold office or have major responsibilities in the following national organizations: Association for Supervision and Curriculum Development, Fund for Adult Education, Adult Education Association, American Asso-

ciation of School Administrators, Executive Committee of the National Council on Schoolhouse Construction, Planning Committee of the National Conference of Professors of Educational Administration, Research Committee of the Association of School Business Officials, National Council of Kappa Phi Kappa, National Association of Educational Broadcasters, National Institutional Teacher Placement Association, Department of Audio-Visual Education, National Society for the Study of Education. In addition, various members of the Staff have close continuing relationships with Unesco, the Air Force, and the Agricultural Extension Service in Washington. The Bureau's involvement in national professional affairs approaches saturation. However, we expect to continue this kind of association.

In state affairs, the members of the Bureau Staff have continued their close association. For many years, members of this Staff have been very active in the Ohio Association of School Administrators, the Ohio Education Association, the Ohio Secondary School Principals' Association, the Ohio Association for Childhood Education. The director of the Bureau has recently become closely associated with the Ohio Association for Supervision and Curriculum Development. The Bureau of Educational Research contributed resources in co-operation with the Ohio Association for Supervision and Curriculum Development to a Conference on Action Research held at Ohio Wesleyan University, Delaware, in July, 1953; the director is also chairman of the Committee on Action Research of this Association. Recently, the Bureau sponsored a small conference on action research attended by professors of education in central and southwestern Ohio, at Columbus.

DURING the year ending October 30, 1953, plans were made for an increased amount of publication by the Bureau. The EDUCATIONAL RESEARCH BULLETIN continued to be distributed to school officials in Ohio and to others throughout the country without charge. The current mailing list of this BULLETIN includes 6,800 names. The BULLETIN is kept on file in virtually every professional library in the United States, and the articles published in it are further circulated through reprints and citations. *The Journal of Higher Education,* too, continued to appear during the past year. It should be empha-

sized that the *Journal* is not a publication of the College of Education or the Bureau of Educational Research. It is an independent national magazine in its field. Its sole relationship to this Bureau exists because Mr. Eckelberry and Miss MacLatchy edit the magazine. Increased publication costs have compelled a rise (to $5.00) in the subscription rates of the *Journal* this year. This magazine stands alone in its field. There is no other publication that regularly seeks to deal directly with problems of higher education which is not sponsored by some national organization. The influence of the magazine is altogether out of proportion to its relatively small number of subscribers, more than a thousand of whom are libraries.

If present plans mature, two monographs will be published by the Bureau during the coming year, as well as the pamphlet by Mr. Conrad mentioned previously. The first of the monographs to be published will probably be "Readability: an Appraisal of Research and Application," by Jeanne S. Chall. This monograph provides some of the background material of the Dale-Chall readability formula. The second of these monographs, by Edwin A. Fleischman, Edwin F. Harris, and Harold E. Burtt, is currently called "Leadership and Supervision." It is a fascinating study of the effect of a certain kind of in-service training on the persons who took it, and the conclusions have wide applicability to school-system in-service programs.

Films and film strips have been published at intervals by the Bureau through its Teaching Aids Laboratory. Currently, the following film strips, with manuals, are available:

How to Keep Your Bulletin Board Alive
Making Teaching Effective
Materials for the Teaching of Arithmetic
Personal Problems of Adolescent Youth
Simplified Film Strip Production
World Affairs Are Your Affairs

IN RECENT years, the demand for Bureau services has grown rapidly. This increased demand is, of course, flattering. In most cases, the Bureau services were initiated by members of the Bureau Staff, and it is naturally a matter of pride to them to find that the services have proved their value and that the demand for them is growing.

The very fact of their success, however, has now presented us with a problem that exists in virtually every division of the Bureau in which an attempt is made to render direct service. For example, the Appointments Division performed 7,828 services of all kinds last year; this year it performed 9,521, with the same staff. The Survey Division received 40 per cent more requests for service this year than it could act on. The demand for manuals from the School of the Air has risen to the point at which it is no longer possible for them to be distributed without charge. The bill is simply too large for our budget. The demand for projection service on the campus and for other services of the Teaching Aids Laboratory has reached the point where the Bureau budget can no longer support these services and it has been necessary to evolve a scheme of charges for some of them. The very success of the Dale-Chall readability formula has produced such a flood of correspondence through Mr. Dale's office that letters concerning this one topic alone occupy a substantial portion of one secretary's time, not to mention the time devoted to them by Mr. Dale.

Everyone knows that the more useful you are, the more you are used. We have come up against the problem this year of having to learn to say "no" to persons whom we have never refused before. The decision to say "no" has been forced upon us; we have had to say it, with great reluctance.

The amount of service we can offer is restricted partly because of a slightly reduced operating budget, partly because of inflation. If a limit had not been forced upon us by budgetary problems, we should nevertheless have had to draw some sort of line, because the Bureau has another function that demands uncommitted time.

THIS other function is, of course, research. The Bureau of Educational Research would be failing to discharge its obligations if its members did not do educational research. It takes much time and effort to develop a research idea. Some time has to be spent exploring blind alleys. A great deal of time has to be spent discovering whether a given idea will stand close examination. In recent years, members of the Bureau Staff have begun to find service obligations crowding out this necessary time. Accordingly, this year and in the years immediately ahead, we are making efforts so to design our work as to

permit time for thinking. It will be of interest to note a few of the current research projects of the Bureau. Some of these have already been mentioned.

The development of some educational television broadcasts
The development of a bibliography of attacks on the schools
The development of some generalizations about rendering abstract ideas into graphic form
The development of a manual to aid local school administrators in the gathering of basic survey data
The development of two chapters, on mass media and education, of a new yearbook of the National Society for the Study of Education
The development of a theory of the creative person, ultimately to be applied to a reformulation of graduate work
A nation-wide inquiry regarding demonstrated economies in school-building design and construction
A study of the vocabularies of the published primary readers

Others could be added. These will illustrate the variety and extensiveness of the inquiries presently under way in the Bureau of Educational Research. How many of these will be brought to a successful conclusion cannot be predicted. It is of the essence of a research bureau that there be a constant development of new research projects—a kind of ferment of ideas.

From all of these comments, it is possible to deduce what it is like to be a member of the Bureau of Educational Research. This Staff is a group that constantly attempts to think at the frontier of thinking, to act at the level of the unknown. Such a position is uncomfortable by definition. Research and creative service are exacting for the individual precisely in the degree that they are significant. Much of the work that is done goes unnoticed and unappreciated—and in this the Bureau Staff is like any other educational staff. To be a member of the Bureau of Educational Research Staff means that one constantly questions the obvious and seeks to discover what new problems should be thought about. It is no easy thing to do.

But the rewards, when one achieves them, are magnificent. The satisfaction of achieving something new and good makes the long journey of discovery eminently worth while. These satisfactions are among the greatest in the educational enterprise, and they make membership in the Bureau of Educational Research what it is.

Kindergarten Children's Familiarity with Measurement

By PAUL E. SPAYDE

DURING the spring of 1951, the teachers in the kindergartens of Lakewood, Ohio, asked some of their pupils a number of questions regarding measures commonly used in everyday living, to determine the children's familiarity with them. To guide the conversations with the children and to assure as much similarity as possible in the interviews, the teachers asked the questions given in "A Test of the Pre-School Child's Familiarity with Measurement."[1]

An item from the test will show its form. In order to find out whether the child knows the time of day—morning, night, afternoon, or noon—the following questions are given:

What time of day is it when you get up and eat breakfast?
When is it dark outside?
or When do you go to bed?

When do you have lots of time to play?
or When do you (or little children) take your nap (their naps)?
or (for children who attend kindergarten in the afternoon) When do you come to kindergarten?

What time comes between morning and afternoon?
or What do we call the middle of the day?
or When does your mother come to take you home from kindergarten?

The devisers of the test attempted to arrange the questions in groups of descending difficulty in order to obtain an answer if the child is familiar with the measure. If the child answers the first of the two or three questions arranged to elicit a response, the others preceded by *or* are not asked. Since the teacher records the answers given by a pupil on a test form bearing his name, the instrument might better be called a pupil's interview record. No numerical score is computed from the completed form, but an inventory of the child's familiarity with the various measures mentioned during the interview can be compiled from it.

[1] MacLatchy, Josephine H. "A Test of the Pre-School Child's Familiarity with Measurement," EDUCATIONAL RESEARCH BULLETIN, XXIX (November 15, 1950), pp.207–208, 222.

SINCE we wished to obtain findings which would be characteristic of all the kindergartens in the school system, the teachers were asked not to limit their interviews to the best or the poorest pupils but to select representative samplings of their groups. In response to this request, completed records of teachers' interviews with 108 kindergarten children in the ten elementary schools of Lakewood were received. The percentages which follow show the portions of this group which correctly identified the various measures of time:

Time—	Correct Responses Per Cent
Parts of the Day—	
Morning	94
Night	97
Afternoon	92
Noon	25
Days of the Week—	
Sunday	94
Non-school days	85
All days	67
Named in order	63
Today	59
The Calendar—	
What is it?	91
What does it tell?	84
Show a day	94
Show a week	50
Show a month	33
How many days in a week?	55
Counted	37
How many weeks in a month?	32
Counted	27
How many months in a year?	16
What year is this?	23
Show on calendar	22
Named his birthday month	61
Named other months	4
Named months in order	4
Seasons—	
Current season	69
Named and described:	
Winter	84
Spring	88
Summer	85
Fall or autumn	67
Specific Times—	
Named clock or watch	96
What does it tell?	97
What time—(clock face used)?	
8:00	47
12:00	52
6:00	55
4:30	14

In interpreting results it will perhaps be best to refer to the questions in the test itself. For example, 95 per cent of the 108 children gave the response, "morning," to the question, "What part of the day is it when you get up and eat breakfast?" Only one-fourth of the pupils gave the response "noon" to one of the four questions designed to get that response. The question, "What days don't you go to kindergarten?" elicited the following: "Saturdays, Sundays, and holidays." It would seem that more than 59 per cent ought to know the name of the current day of the week. Whether or not kindergarten children need to know the months of the year is open to question; however, answers to questions about the calendar lead one to believe that more attention should be given to an understanding of *day*, *week*, *month*, and *year*.

The responses to the question, "How do you know when

it is winter (spring, summer, fall, or autumn)?" are most interesting. All comments about winter refer to cold and snow. A great variety of remarks about spring were made, such as "Easter comes," "buds come out," "rake leaves—planting," "grass and leaves start to grow," "pretty flowers come out," "it gets warmer," "everything starts growing," and many others. The fact that the test was given in the spring may be the reason for a much greater variety of responses to this season. In any event it does indicate that understanding of time concepts can be built upon current experiences.

IN THE part of the test designed to sound the children's familiarity with liquid measure, he is shown milk bottles and jars of quart, pint, and half-pint sizes, and asked to tell what they are called. To elicit the word *gallons,* the following question is asked: "What does your father say to the man at the filling station when he buys gas?" The percentages for this part of the test follow:

	Per Cent		Per Cent
Quart milk bottle	91	Pint jar	24
Quart	60	Gallon (used in response to question)	35
Pint	23	"Fill her up"	7
Half-pint	18	"Give me $—— worth"	6
Quart jar	26		

With the exception of quart as related to milk, there appears to be little understanding of liquid measure. This is not surprising since in the Special Arithmetic Test given to the higher grades about half of the fourth-grade pupils knew there are four regular glasses of milk in a quart. Practical experience with these measures in a classroom should help pupils to better understand liquid measures.

The questions arranged to show familiarity with avoirdupois weight were: "What does your mother say to the man in the store when she wants some meat? How does the man in the store know how much meat to give your mother?" In answering the first question, 50 per cent of the children used the word *pound;* in answering the second, 51 per cent used *weigh,* and 43 per cent *scales.* Several children pointed out that the price is on the label and that it is unnecessary to ask a man for meat. Apparently the concepts of *pound, weigh,* and *scales* are little more than words at this stage of development.

Most of the children called a foot rule and a yardstick a *ruler,* and most of them said they were used to measure things. Small percentages named the foot rule and yardstick

and knew the number of inches in each, as the figures show:

	Per Cent		Per Cent
Show me an inch	38	Foot rule	9
Yardstick (36 inches)	5	Counted	50
Counted	31		

Answering the question "How does your father know how fast the car is going?" or "How fast does your father drive?" the word *speedometer* was used by 10 per cent of the children, and the phrase "2— miles an hour" was used by 11 per cent.

In the measures of groups of like things *pair* was more familiar than *dozen:*

Dozen—	Per Cent
How does your mother buy eggs?	28
How many in a dozen?	30
How many in a half-dozen?	18
Pair (used in relation to shoes)	77
How many in a pair?	87
Named other pairs	69

Most of the kindergarten children knew the names of the pieces of money, as the following percentages show:

	Per Cent		Per Cent
Penny	96	Quarter	69
Nickel	80	Fifty-cent piece	49
Dime	80	Dollar	89

They did not, however, have a very clear idea of the relative values of the nickel and dime:

Nickel = 5 pennies	40
Dime = 10 pennies	29
Dime = 2 nickels	29

The item, "Which will buy more candy [showing (1) a penny and a nickel and (2) a nickel and a dime]?" clearly had a dual meaning for the teachers. Some interpreted the question to ask whether a penny or a nickel will buy more, while others interpreted it to mean whether a penny and a nickel will buy more than a nickel and a dime. The results were not reliable.

More than half of the children could identify a thermometer and tell that it was used to measure "hot" and "cold." The answers to the other questions in the group seeking the words *degrees, tons, gas meter,* and *watts,* are not subject to easy quantitative analysis. They do suggest to teachers, however, the many examples that may be used to give children a better understanding in the area of measurement.

The test gives two opportunities for evidence of the child's understanding of the use of measures. He is asked to find out how many cups of water are needed to fill a pint pitcher. Forty-six of the kindergarten children did this without help

and found that 2 cups filled the pitcher (2 cups = 1 pint). In the second instance, after the child has watched the teacher mark his height on the wall, he is given a yardstick and a foot rule to find out how tall he is. Seventeen per cent noticed the 36 inches in the yardstick and counted the inches needed on the foot rule, starting with 37; 9 per cent understood the directions but counted all the inches, starting at 1.

THE results in Lakewood generally parallel the findings reported by one of the authors of the test based on data obtained from questioning 73 three-, four-, and five-year-olds.

The results show that the children's familiarity with measures of time is more inclusive and more meaningful than their familiarity with the conventional measures. They have learned to notice changes in their natural environment and to identify them by the terms used. Although one older three-year-old remembered summer in November, none of the older threes seemed to remember differences in seasons or to impute any significance to changes in their clothing or in their outdoor surroundings. Older fours and five were quite familiar with the seasons. *Noon* is later identified than *morning*, *night*, or *afternoon*. Of course, they have still to learn the exact meaning of 12:00 noon.

What do we conclude from all this? Simply that out of "the big, booming, buzzing confusion" of sounds which surrounded them in their infancy, these pre-school children have heard these words and remember the context in which they were used. Even the little girl who ran "two miles an hour" did not really understand what she said, but she had the beginning of understanding. She related the two terms properly, and she understood the context from which she got them. Not all these children have listened with equally good effect. According to several of them: Mother asked the grocer for "some meat." Father asked the filling station man for "some gas." More often, however, the children listened and heard *pounds* and *gallons*.

What these children have acquired is the terms used, and in some cases, notably time, their understanding has content. Their familiarity with *quart*, *gallon*, *pounds*, *coins*, and the like, has no real content. They simply recall words or phrases in their habitual context.[2]

It is from these beginnings that mature concepts and understandings are built. Knowing when children are mature enough to go from mere words to real meanings should be most helpful to teachers. Meaningful experiences at the appropriate stage in their development are the essence of a good readiness program.

[2] MacLatchy, Josephine H. "The Pre-School Child's Familiarity with Measurement," *Education*, LXXI (April, 1951), p. 4.

The Factor of Coincidence in Personality Formation

By JOHN BAUER

TO EXPLAIN the machinery of human behavior, many monistic theories have been brought together. In seeking to establish what determines human behavior, geneticists have emphasized hereditary potentials, sociologists have stressed the importance of social institutions under the heading of "environment," psychoanalysts have paid special attention to individual experiences (the Freudians especially to early experience, some of the neo-Freudians also to later experiences). The unprejudiced student of human nature must take all of these viewpoints into consideration. Many thinking persons have long ago concluded that no monistic theory, *per se*, could hold the key to causality. Such thinkers have taken refuge in the theory of heredity-environment interaction and have broadened the simple adage that "heredity determines what you can do, environment what you do do." Within this theory of interactionism emphasis is then attached to the genetic incipiency and to the prodromal development period, tinged with inner-psychodynamics but tainted with outer sociological stimuli factors.

The writer would like to introduce a factor which heretofore has been scarcely acknowledged. This factor deals with the theory of uniquely personal experience which takes into account trivial incidents, coincidence, and accidents as molders of personality organization and as deflectors of previously manifested response behavior. Psychoanalytic therapeuticians would certainly agree that in the analysis of any given individual such trivia as would enter into the "uniquely personal experience theory" would have to be investigated thoroughly.

The writer had the unusual experience of being able to investigate the total life history of one pair of monozygotic twins. At the time of the investigation, which was longitudinal, these monozygotic male twins were twenty years of age and sophomore students at a municipal college. They were investigated thoroughly from the viewpoint of developmental, medical, educational, sociological, and psychometric assessment.

THE developmental, medical, educational, and sociological data were such that they became indistinguishable for the twins involved. It might be noted parenthetically that these monozygotic twins, undifferentiable in looks and behavior, always attended the same classes, schools, and organizations together—hence it can safely be said that the social institutions they came in contact with were similar for them. The fact that in the long run they responded dissimilarly to similar social institutions will be touched on later.

Likewise, the psychometric data were consistently similar for both boys until projective tests were administered. These revealed, dormant behind a façade of identical manifest behavior, meaningful differences in personality organization. The differences which appeared upon projective assessment were substantiated by equally strong differences which emerged from self-expressive material such as autobiographies, compositions, art work, and tape recordings.

When initially undertaken, the study was entitled "Similarities and Differences in the Personality and Manifest Behavior of One Set of Monozygotic Twins—a Depth Study Involving Interacting Organic, Developmental, Psychodynamic, and Environmental Factors as They Pertain to the Total Life History." In this study the similarities found between these identical twins could very well be explained by the shaping forces of social institutions (that is, their demands and their inhibiting influence), by reference to upper and lower levels set by genetic endowment, or by reference to the psychoanalytic theory of early childhood development.

The differences found in the data relating to personality organization could be explained by no single aforementioned theory. To account for them it was necessary to focus on the rôle of trivial incidents, coincidence, and accidents, each of which seemed to constitute at the time of its occurrence a uniquely personal experience in the "inner life of each twin." Furthermore, each of these trivia seemed to deflect the twins further from identity in the development of personality structure.

IT HAS already been stated—and it would require too much space to support this contention—that these twins in essence underwent similar experiences throughout their period of growth. However, a number of exceptions to this statement

must be granted. For instance, the mother of the twins (who had wanted neither of these last-born children) called both by the name of the last-born from their early infancy, and conditioned the boys to respond to the one name. Early in life, the first-born twin would attach himself to his younger brother and depend on him for leadership, decisions, and rescues. Seemingly, the mother's conditioning produced in the first-born twin the feeling of being an integral and inseparable part of his brother. This clinging dependency, in turn, set off a chain reaction as the twins grew older. The second-born, both the leader and the crutch, seemed to tire of his rôle, and to yearn for an individuality and independence of his own. The belief that the mother tended to prefer the second-born can be reinforced by a variety of examples. Thus, for instance, though both boys were identified in infancy by colored ribbons, the mother gave the first-born an enema twice. She relates this episode as an accident.

Both the older sister and the older brother, who served as auxiliary parent images in the home constellation during the twins' developmental period, at first preferred the last-born twin because of his more quiescent behavior; but as the twins grew older, they shifted their preferences to the first-born.

Though both boys have a concept of woman tinged with domineering negativism (the father had died when they were two and the mother had had to be father as well as mother), the twin who underwent an experience of heterosexual seduction at the age of nine or ten (while both were seeing the same movie from adjoining seats) developed a more damaging reaction toward women which led to persistent sexual exploration and conquest. Yet both twins in manifest preferences looked for the same qualities in a woman. The first-born twin, who was snapped at by a dog at the age of four, shortly thereafter experienced dreams in which a dog bit parts off him, and later on developed marked fear of mutilation and castration.

A variety of minor mishaps seemed to occur in the life of the last-born twin. There was evidence that early in life outside stimuli (such as the experience of being hit by a swing) were regarded as a threat. Apparently, he coped with dangers of this type by an autism manifested as magic (all came out well in the end since he was still alive). This tendency to assign quasi-magical endings to stress situations still exists at the age

of twenty. Obviously, one cannot make the assertion that being hit by a swing was the sole causal factor in this type of resolution-behavior. However, were an observer to recall that during early life this twin possessed unchallenged status in human relationships, it would seem a warranted inference that the minor mishaps he experienced appeared more serious in his totality of perception than like experiences which his older brother underwent during early infancy.

The death of the next older brother in the Second World War, when these twins were fifteen years old, was an identical experience for both in terms of stimulus but a different experience in terms of response. Thus, one twin commented that "he was lucky in dying quickly," as if privately relieved that a hero figure of a competitive nature had been removed from the family constellation. The other twin romantically over-fantasied his relationship to his brother, making him a hero, and frequently introducing into high-school compositions nostalgic references to his brother's looks, behavior, and death.

The writer could go on *ad infinitum* about this type of trivia but believes he has made his point. When sociologists speak of environmental influences, they take into consideration the family background, the home—its economic circumstances, standards of conduct, aspiration levels, moral values, intra-affectional ties—the neighborhood, and other institutions such as the school, the church, the club, and so on, invariably considering these social institutions only as they are assessed by the investigator. Hardly ever do they carry the study further, as this writer would imply they should, to investigate the psychic response of the individual to these outer stimuli and, beyond that, to attempt as scientifically as possible to substantiate the reality of this inner response to life, and the accuracy with which it is reported to the interviewer by the subject under investigation. Devices will yet have to be developed by sociologists to corroborate more accurately the unique personal experience and its inner psychic meaning for the individual.

THE findings of this type of study emphasize the importance of a combination of theories in assessing the growth and development of individuals. It becomes evident that the genetic equality of this single pair of twins explains a great deal about the similarity of their growth and development. We have seen evidence marshaled of great similarity in appearance, in intel-

lectual functioning, in physical co-ordination, and in a wide variety of other specified characteristics. All of this points to the need for teachers and counselors to understand something of the biological development of mankind. Since such a large number and variety of qualities are held in common by monozygotic twins, it seems only reasonable to infer that heredity must play an important part in setting upper and lower limits to normal achievement in a culture like the one in which these twins were reared.

The evidence is equally emphatic in pointing to the importance of certain happenings in the early childhood of these twins. The so-called psychoanalytic theory helps to explain why certain kinds of problems presented themselves to both twins. It helps us to understand their preoccupation with certain kinds of emotional needs, and it explains why there is a great deal of similarity in the self-expressive materials. In other words, the data reassure us that a deep understanding of the growth and development of children depends, in part, upon an intimate knowledge of the early years of life.

The so-called manifest behavior of these twins is so similar that we feel compelled to explain it by the influence which social institutions have upon the lives of everyone in the culture. If teachers and counselors are to understand similarities and differences in the growth and development of children, these data suggest strongly that participation in social institutions may be a focus of study. It seems only fair to add that inadequate attention has been paid to this theory. Social institutions not only require certain kinds of behavior and motivation, they also inhibit certain attempts of personalities to express themselves in ways that run counter to tradition. In other words, social institutions also are life-shaping influences. Those who would understand the growth and development of children must also understand how social institutions shape personality.

IN ALL of our special fields of inquiry, there has been a tendency to systematize, to schematize, and to explain consequences in terms of absurdly oversimplified causal factors. The controlling aim has been to produce a consistent system rather than an adequate explanation for diverse personality functioning. In almost every single system, the rôle of accident, or coincidence, or repetition of trivial incident has been minimized. The results of the present inquiry suggest that these factors are

of tremendous importance in the assessment of the meaning of activity. The inner life, that organization of personality which attaches meaning to outward participation, seems to be significantly influenced by these so-called trivial events.

If this inference is accepted as a basis for improvement in the preparation of teachers and guidance workers, it may be suggested that individuals need a method of sizing up day-by-day life situations, no matter how trivial. The individual who is being guided or taught needs a resource which will allow him to interpret accident and incident and coincidence as these arise in his life. He evidently needs a concept of self and a flexible method for interpreting that self in varying situations. Answers as such will not do, because incidents themselves vary so much and have such serious consequences. In order to prepare the individual, we must help him in such a way that he can meet these new situations with the best guarantee of maintaining social and emotional homeostasis.

A final remark with respect to the implications of this study. The evidence is clear that teachers and guidance workers who rely upon one or another of these theories in isolation are bound to be thwarted as they try to interpret the happenings of a complex life. It is the interaction of these theories that best explains the organization and functioning of personality. It would seem, therefore, that teachers and guidance workers should be helped to see these theories in relationship to each other, and taught how best to apply them in the effort to understand children, singly and in groups.

At present, we must conclude that man is probably too complex for any kind of research that is based upon an approach representing a single discipline. There is evidence that we have oversimplified the nature of man and his relationship to his environment. We have oversimplified environmental factors and we have attempted to understand a particular phase in isolation. Similarly, we have tended to oversimplify mental functions when our researches have been concentrated in an isolated way upon a particular kind of functioning personality. There is a great need for an integrated approach to the study of personality, especially that kind of study which would grant more permissiveness to the subject in expressing his feelings and ideas concerning the influences that seem to be affecting his own personality.

EDITORIAL COMMENT

Using Teacher Manpower

THE shortage of elementary-school teachers is bringing about a re-examination of the problem of providing adequate manpower for the schools. Two approaches are being used: first, recruiting more good persons; and second, utilizing more effectively the ones we have. The latter method is relatively new and merits careful consideration.

Last month we commented on the large-scale investigation of elementary-school teaching in Fairfield, Connecticut, which the Department of Education of Yale University is conducting with the support of the Ford Foundation's Fund for the Advancement of Education. One phase of this study will be an analysis of teachers' duties to distinguish those that are professional from those that are subprofessional; the purpose here is to determine whether the current shortage of teachers can be alleviated by using teachers' aides to do nonprofessional work such as is done by nurses' aides in many hospitals.[1]

Even more significant than the Yale-Fairfield study are the recommendations made by the recent Conference on the Utilization of Scientific and Professional Manpower held at Columbia University, October 7–11, under the auspices of the National Manpower Council. Sixty-six leaders in engineering, medicine, education, science, industry, government, and military service took part. It is significant that one of the three work groups into which the conference was divided dealt with teaching personnel; the other two were concerned with the engineering and medical fields.

The proceedings of the conference are to be published by the Columbia University Press. Meanwhile, we are dependent on a news release which presents the high lights of the conference. Sixteen persons from various types of positions constituted the work group on teaching personnel. The principal findings of this group, as reported in the news release, are as follows:

1. The lack of qualified teachers is particularly crucial at the present time when shortages of well qualified personnel are also being felt

[1] "The Teacher's Job and His Training for It," EDUCATIONAL RESEARCH BULLETIN, XXXII (November 11, 1953), pp. 215–16, 224.

in many other professions. Other professions cannot expect to have a continuing supply of highly competent persons if public-school systems lack the qualified teachers necessary to provide good elementary-school education.

2. There are two ways of attacking the problem of teacher shortages: by increasing the number of qualified teachers or by using the present supply of teachers more effectively.

3. Nearly all professional educators agree that vigorous steps must be taken to attract a greater number of able young people into teaching as a career and to retain established teachers in the profession. Increases in teachers' salaries so that they will compare more favorably with those in other professions is a key measure. In addition, ways must be found to encourage the return of married women who have left the field.

4. There is less agreement among professional educators on the question of how the available supply of teachers can be more effectively used. Some hold that teachers are now utilized as effectively as possible and that no improvements are either feasible or desirable. Others, however, believe that significant gains can be made in the area of utilization. They take the position that radical improvements in the financial support for education are unlikely in the immediate future and that, consequently, there is no alternative but to make better use of the teaching personnel now available.

5. Among the ways of making better use of teacher time is to relieve the teacher of routine clerical tasks, such as keeping attendance records, and of certain disciplinary responsibilities, such as supervising study halls and lunchrooms. Subprofessional personnel can assume responsibilities of this kind. More ambitious use can also be made of student assistants. Films and television offer an opportunity for relieving the teacher of some work in classroom instruction so that he is freer to spend more time with individual pupils. Teacher teams composed of master teachers and professional assistants might make it possible for the same number of teachers to handle a greater number of students and even improve the quality of instruction.

6. Various ways of improving the utilization of teachers have been tried in different communities. One obvious need is for a clearinghouse arrangement through which educators could become acquainted with developments in other school systems.

7. Finally it seems clear that the problem of better teacher utilization has not yet been attacked in sufficient seriousness and vigor.

These recommendations merit extended comment, and will be discussed in the January issue of the BULLETIN.

R. H. E.

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